

# Regulation by Formula

Tools to facilitate changing utility economics.

BY MICHAEL SCHMIDT



These are challenging times for the electric and gas utilities. Reliability projects, renewable portfolio standards, greenhouse-gas emissions control, AMI, smart-grid investments, and conservation programs—all these things add to costs, but might bring in no additional revenue. Moreover, there will be unprecedented capital investment in transmission, renewable generation projects, and replacement of old facilities from the 1950s and 1960s. Thus, earnings likely will be more closely watched and traditional general rate cases might not be able to keep up.

### Regulatory Options

There are a number of regulatory tools available to address rapid changes in utility operating and capital costs. First is the possibility of using a projected test year instead of a historical test year; but there's nothing really new here, and it still requires a general rate case. A full blown general rate case is time consuming and costly for the utility, the regulator, and intervenors. Cost estimates for a projected test year add to disputes among the parties.

A second option, decoupling commodity sales from base rate revenues serves to tie base rates to the number of

customers, equivalent to allowing the utility to recover a fixed amount of money per customer regardless of sales. A balancing account tracks any over or under-collections during the year. The balancing account is closed out by adjusting base rates in the next year. Any commodity costs (e.g., fuel, purchased power, natural gas) are billed to the customer as a separate line item on the bill. However, decoupling does nothing to incorporate increased operating costs or increases in rate base.

A third option, performance-based regulation or ratemaking (PBR) attempts to adjust rates annually in response to a

pre-specified escalation factor reduced by a productivity factor. The formula for PBR is:  $P_t = P_{t-1} ((1 + esc.) - X)$ , where  $P_t$  equals the new price in time period  $t$  after adjustment;  $P_{t-1}$  equals the old price in the prior time period  $t-1$  before adjustment;  $esc.$  equals a predetermined escalator, for example the consumer price index (CPI); and  $X$  equals a predetermined productivity factor that serves to reduce the escalator and account for productivity improvements in the time period  $t-1$ .

PBR, although it provides for a rate increase each year, might or might not cover all operating cost increases, cost of capital increases, or significant increases in rate base. Moreover, absent decoupling, declines in sales likely will result in a revenue requirement shortfall. In addition, the  $X$  factor is difficult to establish and the escalator not necessarily correlated with utility cost increases. Finally, the PBR usually has a three- to five-year time limit before another full-blown rate case is triggered.

A fourth option, ratemaking by formula, allows for changes in rates to reduce or increase rates in response to changes in earnings and rate base.

### Planning for Change

Ratemaking by formula addresses two types of issues: those relative to earnings, and those relative to revenues. In summary, a rate-of-return band is established around the allowed return on equity (ROE) from the utility's last general rate case. Earnings outside the band are shared with customers through rate

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**Michael Schmidt** has held senior management positions with electric and gas utilities, consulting firms and a state regulatory agency. He wrote several books on utility issues, including *PUR's Performance-Based Ratemaking: Theory and Practice* (2000). Email him at [michaelschmidt@msn.com](mailto:michaelschmidt@msn.com).

decreases for excess earnings and rate increases for deficient earnings. The revenue aspect of the model incorporates new assets and other significant cost items into rates without a full blown general rate case. Significant sales reductions can be incorporated into rates, as well as revenue losses from conservation activities.

Under ratemaking by formula, earnings up to a pre-defined level are retained by the utility. Earnings in excess of that level are shared with customers by reducing rates—referred to as asymmetrical ratemaking. Earnings below a pre-defined level result in an increase in rates to bring earnings up to the pre-defined level—referred to as symmetrical ratemaking.

Ratemaking tied to earnings isn't new. For example:

- *Sheffield Gas Act* approved by the British Parliament in 1855 limited dividends when price of gas higher than a preset level, but allowed a higher dividend when prices were below a preset level;

- Consumers' Gas of Toronto in 1877 refined the process to identify a specific return target allowing for price decreases above the target and price increases below the target (included a \$1 million dead band); and

- Recent earnings-based ratemaking by formula applications include New Mexico 1975; MidAmerican (Iowa) 2001; Entergy LA 2005; Entergy Gulf States 2006; Entergy Mississippi 2006; and Southwestern Electric Power Co. 2007.

The mechanics of the earnings side of ratemaking by formula is tied to the allowed rate of ROE. The calculation is a three-step process: First, establish earnings targets; second, calculate jurisdictional regulated income; and third, determine whether jurisdictional regulated income exceeds either or both earnings targets.

The earnings targets are applicable to earnings between the allowed ROE (Target ROE) as established by the state regulatory commission up to a preset number of basis points above that target (*i.e.*, 80 basis points). The first target for an asymmetrical application is calculated as follows: *Equity Portion of Jurisdictional Rate Base x Allowed ROE = Equity Earnings Target 1*. The second target is calculated as follows: *Equity Portion of Jurisdictional Rate Base x (Target ROE + 0.8 percent) = Equity Earnings Target 2*. The first target for a symmetrical application (Target 3) is the same as for asymmetrical applications. Target 3 is calculated as follows: *Equity Portion of Jurisdictional Rate Base x Allowed ROE - 0.8 percent = Equity Earnings Target 3*.

The next step in the process is the determination of earnings sharing with customers through pre-established sharing bands. For example: earnings between Target 2 plus 0.5 percent are shared 50:50 between shareholders and customers; earnings between Target 2 plus 0.5 percent up to 1 percent are shared 60 percent with customers, 40 percent with shareholders; and earnings above Target 2 plus 1.5 percent go to customers.

For example, with an ROE of 10 percent, Target 2 is 10.8 percent establishing a 10-percent to 10.8-percent dead band with all earnings going to shareholders; the earnings from an ROE of 10.8 percent to 11.3 percent are shared

50:50 between customers and shareholders; an ROE of 11.3 percent to 12.3 percent is shared 60-percent customers, 40-percent shareholders; and all additional earnings above 12.3 percent go to customers.

Sharing an earnings deficiency works the same way, but deals with earnings below the allowed ROE. For example, for an earnings deficiency between Target 1 and Target 3, shareholders absorb all of the earnings deficiency; deficient earnings from Target 3 less an additional 0.5 percent share the deficiency 50:50 with customers and shareholders; and the deficiency in earnings from Target 3 minus 0.5 percent down to 1 percent are absorbed 40 percent by shareholders, and 60 percent by customers. Additional earnings deficiencies below Target 3, less 1.5 percent, are all made up by customers. For example, between 10 percent to 9.2 percent, all of the earnings deficiency is absorbed by shareholders; the portion of the earnings deficiency from 9.2 percent to 8.7 percent is made up 50:50 between customers and shareholders; the earnings deficiency between 8.7 percent to 7.7 percent is made up 60 percent by customers, 40 percent by shareholders; and any earnings deficiencies below 7.7 percent are all made up by customers.

The process depends on an annual audit and review by commission staff. Hearings or settlement talks would be triggered if there are intervenors. The filing requirements would include an earnings monitoring report using book amounts as adjusted based on the results of the utility's most recently completed general rate case and subsequent settlements resulting from the annual audits. The filing should include: 1) schedules for regulated income showing revenue and expenses by FERC Uniform System of Accounts; 2) a cost-of-service study to allocate expenses and rate base; and 3) cost of capital calculated on an end-of-year basis. To simplify the refunds to, or

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recovery from, customers, revenue adjustments might be allocated to each applicable rate class based on that class' base revenue as a percentage of total base revenues eligible for refund or recovery of deficiency from customers if a symmetrical plan is used.

The revenue side of ratemaking by formula provides for recovery or refund of incremental costs and revenue requirements for a limited number of items. Examples include additions to capacity; significant changes in sales both positive and negative; purchased power capacity costs; and the loss of any revenue from interruptible rate programs. Thus, the process acts like a fuel adjustment clause in regard to revenue in that other cost changes are ignored as long as earnings Target 2 is not exceeded. The key word is incremental in that the process is sort of a mini-rate case for new additions (or deletions) in the revenue requirements associated with certain predefined cost elements, such as:

- Purchased power capacity: the revenue requirement associated with the capacity costs portion of purchased-power agreements and interruptible contracts if excluded from base rates;
- Lost revenue (if any) from conservation programs;
- Environmental costs: in the event the company incurs new environmental costs resulting from the imposition of regulations that previously haven't been imposed;
- New major construction projects: recover the retail revenue require-

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ment with major construction projects not fully recovered through current base rates (commission pre-approval for the project is necessary);

- Storm reserve: in the event the company's approved storm reserve reaches a balance below a pre-specified level, the company should be allowed to make an adjustment necessary to increase the storm reserve to the commission-approved level (*i.e.*, the increase must be grossed up for applicable taxes);
- Exceptional changes: it's recognized that from time to time a utility might experience increases or decreases in costs, or decreases in revenues, that occur as a result of actions, events, or circumstances beyond the control of the company; and
- Loss of customers or customer load: a utility might also, from time to time, experience significant reductions in its base revenue due to loss of customer load targeted to some level of ROE reduction (*i.e.*, 0.5 percent).

### Avoiding Pitfalls

Ratemaking by formula can present certain challenges for utilities and regulators.

Most notably, it might mitigate utility efficiency. The stimulus of regulatory lag is lost and the utility might be lulled

into a cost-plus situation. The regulator must carefully review the annual cost-of-service study required as part of the utility's annual filing to try to identify imprudent expenditures—especially an increase in expenditures as the higher sharing bands are reached. Performance incentives (*e.g.*, for reliability and customer satisfaction) tied to financial rewards and penalties also would be helpful. In addition, the regulator periodically should hold hearings that deal only with cost allocation and rate design, since over time with ratemaking by formula there is likely to be a mismatch between costs and allocation or rate structure. The cost of equity capital also could get out of whack with capital market conditions and should be the subject of separate hearings.

Tasks for the regulator, among others, include: establishing and monitoring operating parameters; conducting the annual review process; monitoring rate-base level; monitoring rate of return; evaluating any incentive results; pre-approving major capital expenditures; reviewing cost of service each year; pre-approving purchased power and natural gas contracts; establishing and monitoring commodity purchase incentives; and pre-approving major sales adjustments. Thus the regulators' focus is proactive, devoted to pre-approvals and incentives. ■

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